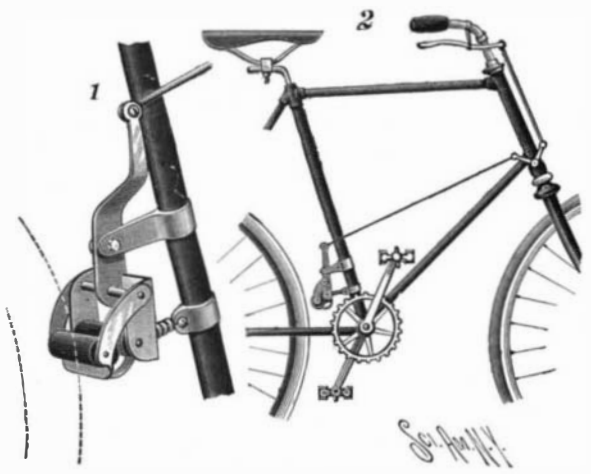
AN IMPROVED BICYCLE BRAKE.

The brake shown in the engraving, which has been patented by Richard T. Addy, of Wallingford, Conn., is designed when applied to efficiently brake the wheel without injuring or materially wearing the pneumatic tire. Fig. 1 is an enlarged view of the brake, whose position on the bicycle frame is shown in Fig. 2, the brake lever being fulcrumed in a clip on the upright bar and connected by a rod with a bell crank lever, from which a link extends to a handle lever on the handle bar. At the lower end of the brake lever is a casing in which is journaled a roller of rubber or other elastic material adapted to engage an

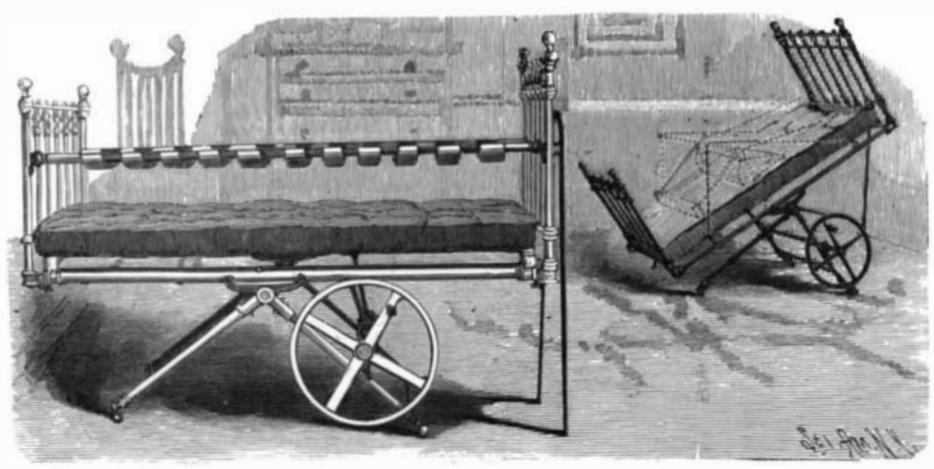


ADDY'S BICYCLE BRAKE.

adjacent brake roller journaled in a frame fulcrumed just above both rollers on the brake lever. The brake roller is held normally out of contact with the wheel by a spring connecting the lower end of the lever with the brake roller frame, and the brake lever is normally held in withdrawn position by a spring connecting its lower end with a clip on the connecting bar. By moving the handle lever, however, the rollers are brought into frictional contact with each other, and the brake roller is made to bear against the tire with a force proportioned to the pressure exerted on the handle lever, thus effectively braking the wheel, although the rotary motion of the rollers prevents especial wear of the tire.

THE GORHAM ADJUSTABLE BED.

A bed for invalids, so constructed as to permit of a great variety of adjustments, is shown in the accompanying illustration. It is manufactured by Fred F. Wheeler, No. 30 Beaver Street, Albany, N. Y. By means of a simple and easily operated mechanism, the patient may be given any desired position, and the bed line never be broken, whereby a fractured limb or diseased joint may remain immobilized and in line, whatever the position of the bed. The principal view represents long adjustable elevating bars, connected by webbing strips in place as when the bed is to be used for patients who are entirely helpless and who will need to be lifted frequently. The construction is such that the webbing may be released to allow it to lie slack upon the mattress, the strips being tightened to lift the patient. To elevate the patient on the webbing strips, a skeleton horse, such as stands at the head of the bed, is used. In the other view the bed is shown in inclined position and with the elevating bars removed, dotted lines indicating the position of a re-



THE GORHAM ADJUSTABLE BED.

movable seat and foot rest for supporting a patient comfortably in such position, and foldable supports for a table to be held in front of a patient. To give the bed any desired inclination, it is simply necessary to turn a hand wheel at the side, which operates a right and left hand screw that moves the arms that elevate or lower the bed. Both the seat and foot rest are conveniently adjustable as may best contribute to the comfort of the patient. This bed is designed to obviate bed sores and bed tire, is built to last a lifetime, and can be manipulated by a child to move the heaviest and most helpless patient. It has been warmly commended by doctors and surgeons who have tested it in practice. Mr. Wheeler issues an illustrated catalogue which is sent on application.

The Battleship Texas in Commission.

The United States battleship Texas, which we illustrated in our issue of January 19, 1895, was put into commission at the Norfolk Navy Yard at Portsmouth, Virginia, on August 15, 1895, in the presence of 500 visitors. On board was Rear Admiral George Brown and a number of other navy officers and prominent citizens.

The Texas was launched on June 28, 1892. The original plans were made by English designers, but these have since been considerably altered. The Texas is a twin screw, steel armored vessel of 6,335 tons normal displacement. She is driven by two sets of triple expansion engines capable of developing 5,800 horse power with natural draught and 8,600 horse power with forced draught. The vessel is 290 feet in length and 64 feet 1 inch wide. It has a mean draught of 22 feet 6 inches and will carry about 950 tons of coal. The main armament consists of two 12 inch breech-loading guns, each weighing 46½ tons, mounted in two turrets, one on either side of the forward deck. A secondary battery consists of four 6 pounder and four 3 pounder rapid-firing guns, with four 47 mm. Hotchkiss guns. All of these are mounted on the gun deck, with a 1½ inch plating to protect them. There are besides two Gatling guns and two 37 mm. Hotchkiss guns mounted on the bridge. The military tops and the flying bridge are provided with similar equipments.

The turrets are armored with 12 inches of steel and their bases are inclosed by a diagonal redoubt armored with 12 inch steel plates, which will also serve to protect the hydraulic machinery used for operating the guns and the smoke pipe casings. The boilers and engines are protected by a belt of armor 12 inches thick, extending 2 feet above the designed water line and 4½ feet below it, having a length of 116 feet. There is a protective deck built of 12 inch steel above the armor belt. The hull of the Texas is built on the cellular system and is constructed throughout of steel. A double bottom extends under the engines, boilers, and magazines, and is divided into numerous watertight compartments by longitudinal and transverse partitions. There are in all 129 of these compartments, and all are connected to steam and hand pumps by an extensive drainage system.

The boilers and engines are in watertight compartments.

The ship is lighted throughout with electricity.

The machinery for the Texas has been built by the Richmond Locomotive and Machine Works, of Richmond, Va.

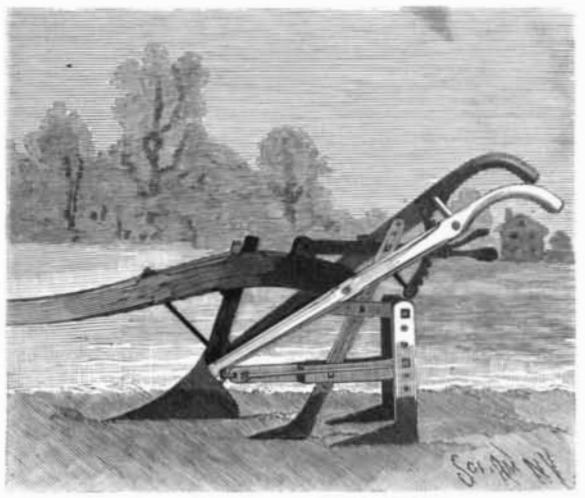
Alumina from Clay.

The following process is stated to yield excellent results. The clay is thoroughly incorporated with a mixture, in equal parts, of ammonia and potassium sulphates, in such proportion that three molecules of ammonium sulphate may be present to every molecule of alumina. The mixture is made into hollow bricks, which are then heated in an oven to 270°—280° C. At this temperature gaseous ammonia is given off, and acid ammonium sulphate produced, which immediately reacts with the potash salt present, acid potassium sulphate being formed. The latter, at the above temperature, combines with the alumina of the clay to form alum. The alum is finally extracted from the bricks by means of water, and freed from iron by recrystallization. The insoluble silica remaining behind may be employed in cements. Granular alumina is prepared as follows: The powdered alum is spread out in a thin layer on shelves arranged in a vertical tower, which is traversed by the warm, moist, ammoniacal fumes derived from the brick oven above mentioned. Under these conditions the alum is transformed in situ into alumina—retaining the form of the original powder—and potassium and ammonium sulphates. The latter may be subsequently removed by washing, and used over again. The alumina thus obtained is absolutely free from silica, and is readily convertible into sulphate, etc.—J. Heibling, Comptes Rend.

A GERMAN artisan's breakfast consists of coffee and bread; his dinner of soup made of water, slices of bread, slices of onion, and a little butter, meat once or twice a week; his supper, soup, cheese, potatoes and bread, with sausage and beer.

A SUBSOIL ATTACHMENT FOR PLOWS.

The illustration represents an attachment applicable to any style of plow, and which will not be in the way of plowmen, the subsoilers being adjustable vertically and laterally as required. The improvement has been patented by Theodore Woodard, of Garland, Kansas. A forward subsoiler is adapted to track the ordinary share, and two rear subsoilers each have a vertical apertured shank, the shanks being connected by cross bars, one of which carries a bifurcated beam whose forward end is connected with a staple on the stock of the main plow. Extending upwardly between the members of the beam is the apertured shank of the

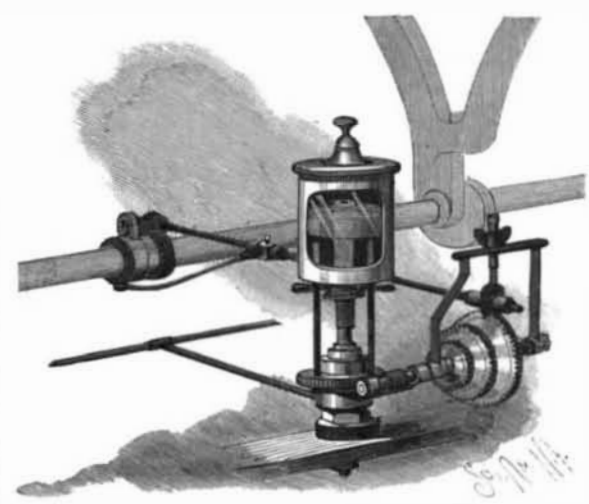


WOODARD'S SUBSOIL PLOW.

forward subsoiler, which is vertically adjustable, and is adjustably connected with the rear subsoilers by a link. The cross bars connecting the rear subsoilers are of sufficient length to permit the plows to be adjusted laterally. The entire attachment is raised and lowered by a lever fulcrumed on the rear of the plow beam and adjustably attached to the standard of the forward plow, the lever extending rearward between the handles and having a thumb latch engaging a rack on one of the handles.

AN IMPROVED LUBRICATOR.

A device to uniformly and forcibly feed the desired amount of lubricant to an object to be lubricated is represented in the accompanying illustration and has been patented by Charles P. Hogue and Joseph W. Smith, of Portland, Oregon (Box 2090, Station A). In the lubricant-containing vessel is a stationary piston on the upper end of a hollow stem from whose base piece extends a feed pipe to carry the lubricant to the object to be lubricated. On the under side of the bottom of the lubricant reservoir are half nuts, spring pressed to hold their threads in contact with a threaded portion of the hollow stem, and in the bottom of the reservoir are segmental slots engaged by pins extending up from a worm wheel, so that when the worm wheel is rotated the pins carry the vessel around, and it is moved downward on the threaded portion of the stem, forcing out the lubricant. The worm wheel rotates loosely on the lower part of the stem, and is in mesh with a worm on a transverse shaft carrying a series of graduated worm wheels on a common hub sliding on the shaft, which has a keyway engaged by a set screw. Either of the graduated worm wheels may thus be made to engage a worm on a shaft at whose other end is a worm in mesh with a worm on a



HOGUE AND SMITH'S LUBRICATOR.

line shaft, and the rotation of the latter actuates the different worms to turn the lubricant reservoir and force the lubricant through the hollow stem to the feed pipe and thence to the bearings to be lubricated, the feed ceasing when the line shaft stops. The half nuts engaging the hollow stem on the under side of the lubricant reservoir have handles, by which the operator may open the nuts and slide the vessel down by hand, to feed a large amount of lubricant at one time, and when the vessel is emptied the half nuts are similarly opened and the vessel raised to be refilled through its filling cap at the top.